# THE VETERINARY RECORD

**A Weekly Journal for the Profession.**

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S.

No. 1592. JANUARY 11, 1919. VOL. XXXI.


### SCHEDULED DISEASE IN 1918.

With the report of December 28th, the Board of Agriculture completed its returns of scheduled disease for 1918; and we can review a year's work which, despite all difficulties, has been largely successful and highly creditable.

Three diseases show considerable decline. Anthrax has 245 outbreaks against 421 in 1917, swine fever 1407 against 2104, and sheep scab 351 against 543. The improvement in sheep scab becomes more marked from the fact that 244 of the 351 outbreaks occurred in the first six months of the year. We seem to have done so well against these three diseases as we could even have hoped.

Only three outbreaks of foot-and-mouth disease, involving 14 animals, occurred during the year; and all were close together. The first was late in September, the other two in October. It seems that these occasional visitations cannot be avoided at present; the great point is that we are able to subdue each as it comes. We are doing as well against this disease as could reasonably be expected.

Other diseases show the inevitable results of war conditions. By far the most serious position is with regard to rabies. Over a hundred cases have occurred since the beginning of September, and fresh ones are still being reported every week. So far, the disease has been successfully confined within the area in which it first appeared; and there is no doubt that the Board will be able to deal with the existing amount of it in time, if only fresh importations can be prevented all over the country. We all know how it originated, and recognise the only means of avoiding further heavy infection of the kingdom. The most pressing need just now is to teach the public the danger of importing dogs, which the Board of Agriculture is trying hard to do; and many veterinary surgeons are in a position to give valuable help in this direction.

Glanders, for the first time for many years, has increased a little; parasitic mange has increased a great deal. The cause in both cases is war conditions; and in both we may expect further increases next year.

This leads to the last and most important consideration. We are now commencing a time which will be more dangerous, so far as the spread of contagious disease is concernsd, than the period of actual fighting. The danger will be materially increased by the chaotic conditions which now prevail over so large a part of Europe; and no one can say how long those will continue. But, even if order is restored upon the Continent much more quickly than at present seems likely, the dangers of importing disease will be greater than they ever were during the war. It is fortunate for us that the Board's veterinary staff is efficient and well led; for it will need all its resources, and all the assistance that the profession can give, in the time that lies ahead.

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## OBSERVATIONS ON NEW RABBIT DISEASE AND ITS RELATION TO COCCIDIOSIS.


By E. R. SMYTHE, M.R.C.V.S., Falmouth.


Since utility rabbit keeping has become popularised in this country, attention has been drawn to the very high rate of mortality occurring among young rabbits. The subject has of late received a considerable amount of attention from veterinary surgeons and others, and the losses have been universally attributed to the effects of coccidia, present in the intestinal walls and the liver.

It is the intention of the writer to show in this article that coccidia alone are but rarely responsible for death, that these protozoan parasites are common to almost every rabbit, and that the actual cause of the disease is the presence of a specific organism in the blood or in various organs, being deposited therein by the blood-stream.

### THE PREVALENCE OF COCCIDIA AMONG RABBITS AND OTHER ANIMALS.

Seeing that coccidiosis has been blamed for the wholesale destruction of warrens and pedigree studs, it has been inferred that there existed rabbits which were free from coccidia as well as others infested by them. Moreover, it has been urged that an infested doe is incapable of rearing healthy youngsters, and that such an animal introduced into a warren would necessarily lead to disease and


VETERINARY MEDICINE DEPT.

mortality among the previously healthy stock. It has even been advised in the press that the fæces of all newly purchased animals should be examined microscopically, and that all does, even when apparently healthy, in which coccidia were demonstrable, should be rejected.

We have examined the fæces of probably hundreds of rabbits of all ages, kept under varying conditions of domestication or living wild in the natural state. Some of these tame rabbits were from so-called "infected" stock; others were apparently perfectly healthy. In no case have we failed to detect coccidia upon microscopical examination.

In some instances, the parasites were present in far greater numbers than in others, but their relative frequency had apparently no bearing upon the rate of mortality; in fact, we have frequently demonstrated the presence of enormous numbers of coccidia in "healthy" young rabbits from studs in which there was no mortality or history of such; whereas in warrens or hutches, where 95% of the young rabbits invariably died, frequently very few coccidia could be detected.

The earliest age at which we have found coccidia in the fæces is one week.

From our investigations we conclude that practically, if not absolutely, every rabbit harbours coccidia, and that they are natural parasites. Although they produce characteristic lesions in the intestine and liver, and sometimes in the respiratory tract, these are very rarely sufficiently grave to cause marked illness or death.

In all probability the same remarks regarding the presence of these parasites apply to the great majority of herbivorous animals. They can be detected in the fæces of nearly all, if not all, ruminants. In bovine fæces they are plentiful, and although they have been credited with causing dysentery in calves, it is more probable that they render the intestinal wall less resistant to the attack of other organisms.

Although we have made no investigation, it is also possible that "white diarrhœa" of chickens and young turkeys may be dependent upon similar causes, although in our experience coccidia can but seldom be detected in the fæces of healthy birds.

**Symptoms.** For the sake of clearness we will now briefly describe the symptoms occurring in young rabbits affected with the disease which has up to the present been confounded with coccidiosis. The disease may assume an acute, subacute, or chronic form. It may appear in rabbits a fortnight old, more frequently it developes at the age of five or six weeks, and but seldom after ten weeks.

*The acute form* is most common in rabbits during the first six weeks of their lives. As a rule one or more are found dead in the morning without having exhibited signs of previous illness. Death is in nearly all cases preceded by convulsions lasting from a few minutes to several hours.

*Subacute and chronic types.* Here the animals are lethargic, and sit huddled up, with the eyelids half closed, and exhibit a staring, "open" coat. The appetite diminishes and rapid emaciation sets in. Diarrhœa may or may not be present; sometimes it is profuse and watery. In the majority of subacute cases death occurs suddenly after a convulsion. In those instances in which the chronic form appears, the abdomen enlarges whilst the loins waste, so that a characteristic "pot-bellied" appearance results. Recovery is very rare.

It is interesting to note that in certain districts where calves suffer from "coccidiosis," they frequently develop convulsions which precede death, and it is possible that the same causes may operate in these animals as in the rabbit.

**Post-mortem appearances.** *Acute form.* Usually *nil.* When coccidia are present in large numbers the characteristic liver lesions may be observed, but, in our experience, these may be met with in nearly all rabbits. Lesions due to invasion of the bile ducts by worm embryos are almost equally common.

Apart from lesions due to these causes, careful examination will usually detect one or more pale areas in the liver tissue. These will be discussed later, In addition, in a few cases one meets with a diphtheritic deposit upon the mucous membrane of the large intestine.

*Subacute cases.* The bowel, when washed and held to the light shows numerous pits or ulcers, filled with a gritty or cheesy substance. The appearance may be as though the bowel were sprinkled with fine sand.

*Chronic form,* The bowel wall, liver, and particularly the spleen, and in a few cases the pleura and peritoneum, show numerous nodules, somewhat resembling those of glanders.

**Etiology.** As stated before, we have formed the opinion that the mortality in young rabbits is *not* due to the presence of coccidia alone, but is brought about by a specific organism.

The bacillus, which is always in evidence in these cases, ranges from 2 to 5 *microns* in length and is about 1 to 5 *microns* in breadth, including its envelope, which is well-marked and comparatively thick. In appearance it somewhat resembles the anthrax bacillus. The ends are square-cut and it commonly occurs in pairs or in threes. It stains readily with methylene blue, but not by Gram's method. It is to be found in great numbers in the ulcers in the walls of the large intestine, and although innumerable organisms are present in the intestine, by washing the bowel and subsequently scraping the surface of an ulcer the bacilli are obtained in great numbers, almost free from adventitious bacteria. The diphtheritic membrane, when present on the surface of the intestine contains, besides coccidia, innumerable organisms of the type described.

During the convulsions which characterise the acute form of the disease, a condition of septicæmia may be demonstrated by microscopical examination of blood films. The bacilli are in some cases very plentiful but usually when viewed with a 1/12 in. oil immersion lens, from one to three may be observed to each field of the microscope. They may also be found in the substance of the spleen, but, are more plentiful in the one or more localised light-coloured patches, before mentioned as occur-

ing in the liver. The largest number of bacilli are to be fonnd in the brain substance, when this organ has been removed directly after death. This applies only to those cases in which convulsions have occurred.

In the few instances in which by careful nursing, life has been prolonged for a few weeks, we have found that the nodules, before mentioned have developed throughout the abdominal organs. The lungs themselves do not appear to have become infected, although the pleura frequently shows evidence of it. The whole appearance has suggested either tuberculosis or glanders. The nodules however showed no true caseation, but were composed of a centre of creamy pus surrounded by an inspissated layer. The pus, upon microscopical examination, appeared to be a pure culture of the bacillus described.

The disease therefore appears to correspond with the pseudo-tuderculosis of rabbits described by Pfeiffer, but assumes an acute septicæmic type. It is apparently introduced into the system by means of infected foodstuff. Immunity appears to be acquired with adult age.

It appeara probable that bacilli gain admission to the blood stream through the liver, which they reach via the bile ducts, possibly in company with coccidia; or that they enter the vessels or lymphatics through the intestinal walls. A very distended condition of these vessels associated with swelling of the neighbouring glands, occasionally met with on post-mortem examination, points to the lymphatic system as being the principal channel of infection. Coccidia may assist the bacteria to penetrate the bowel wall, but the typical ulceration present in many cases appears to bs. due to the action of the bacilli.

The actual cause of death in acute cases is in all probability embolism or hæmorrhage occurring in the brain or its membranes. The post-mortem appearances usually point to one of these conditions. Coccidia apparently have little effect on the health of rabbits unless they are present in sufficient numbers to almost totally destroy the functions of the liver. They seldom cause death, but may be responsible for a condition of chronic emaciation in adult or half-grown rabbits.

### Breeding and Feeding Experiments.

To obtain further proof of the minor part which coccidia play in producing mortality in young rabbits, the writer conducted the following experiments. Ten does, each showing numerous coccidia in the fæces, were bred from. The does throughout, and the young when sufficiently advanced, were fed on bran and leaves of cabbage and other green stuff from one particular source. The average mortality among the young stock was 95 per cent. The cases were all of an acute type, death being preceded by convulsions, at ages varying from three to six weeks. A few of the same does and the surviving young does were removed to other premises and bred from. Coccidia were still as numerous in the fæces. The food now consisted of bran and grass or other hedge plants. Those does which had formerly lost practically the whole of their youngsters, and the surviving young does bore litters which in their turn harboured coccidia, but the mortality from disease was now reduced to nil.

These experiments indicate that the disease is conveyed by infected greenstuff or that certain premises harbour the organism, which is apparently pathogenic only to young animals It is also interesting to note that a definite period usually elapses in acute caees between ingestion of infected greenstuff and the occurence of symptoms. Several rabbits sf the same litter invariably developed convulsions on the same day, and in nearly every case on the third or fourth day after receiving the infected leaves.

### Prophylaxis.

The essential factor is the avoidance of leaves and fodder from certain infected sources. Hedge-plants are to be preferred to vegetable leaves. Cleanliness and the isolation or destruction of infected youngsters is imperative.

We have seen satisfactory results follow the daily administration of Sodium sulphocarbolate, dissolved in milk, grs. ii to each young rabbit.

### Treatment.

Destruction is to be advised. Outbreaks of diarrhœa can be controlled by administration of Creosote $\frac{1}{2}$ minim, for a rabbit of six weeks, combined with a little catechu.

Possibly, were the investigation carried further, an immunising serum might be prepared for use in valuable stock.

## ABSTRACTS FROM FOREIGN JOURNALS.

### Polyvalent Serum of Leclainche and Vallée in the treatment of Canine Distemper.

Bresson gives an account of this in the *Revue générale de Médecine Vétérinaire* for 1917. His view of distemper is as follows. In veterinary pathology, distemper is perhaps the type of infections in which the secondary action of common microbial agents exceeds in gravity the primary action of the specific agents. The filtering virus of Carré, the causal agent of distemper, appears, when alone, to be easily tolerated by the animal. The clinical signs, the serious symptoms, and the mortal lesions observed in this disease are caused by the ordinary microbes of suppuration (Streptococci, staphylococci, etc.), which discharge their pathogenic *rôle* secondarily, by favour of the effects of the filtering virus. For this reason, leaving on one side all symptomatic treatment, the management of distemper is reduced to combating and preventing the secondary action of pyogenic microbes.

Starting upon this basis, and proceeding solely upon the principle of the great importance which secondary pyogenic infection possesses in distemper, the author, upon the advice of Leclainche and Vallée, has used the polyvalent serum prepared by these workers. All his distemper cases were treated systematically for five days with a daily subcutan-

eous injection of from 40 c.c. to 50 c.c. of polyvalent serum. Two dogs were treated with intravenous injections of 30 c.c. without any particular result. At the end of five days the dose was reduced to 15 c.c. every two days. The injections were made at different sites (neck, shoulder, flank), and without special antiseptic precautions.

In addition to the serum the author employed the following symptomic treatment. Upon the entry of the dogs into the infirmary he gave an emetic of Syrup of ipecac. and followed this up with tonic injections of caffeine, a milky diet, rice water, powdered carbon, and alcohol.

From his experiences the author concludes that the polyvalent serum, used in massive doses from the time of the appearance of the first symptoms, has preserved the animals from pyogenic complications, and that, used upon animals bearing manifest secondary lesions, it combated the infection by the pyogenic agents causing these lesions, and enabled a large number of such animals to be saved.

W. R. C.

### Vesicular Stomatitis in Cattle.

Adolph Eichhorn.—*Amer. Jl. Vet. Med.*, 1917.

The United States Bureau of Animal Industry received rather alarming reports from Kansas and neighbouring parts that a disease existed among the livestock, particularly among cattle and horses, closely resembling foot-and-mouth disease. On arriving at the scene of the outbreak Eichhorn observed that the buccal lesions resembled those of foot-and-mouth disease so closely that a differentiation was almost impossible. In early cases typical vesicular formations with an accumulation of lymph were found. These vesicles ruptured readily, leaving a surface similar to that seen in foot-and-mouth disease. The lesions were not confined to any part of the mouth, the tongue was affected in about 50 per cent. of the cases, the dental pad was rather more frequently affected; the other parts of the buccal mucous membrane showed lesions varying in frequency. The regenerative process progressed very rapidly, the only difference from foot-and-mouth disease being that in some cases the eroded parts were covered with a thick gelatinous pseudo-membrane.

Inoculation tests.—Three calves were inoculated by scarification and five others, kept in another isolated pen, were inoculated intravenously with material from the lesions. The scarified calves developed lesions on the dental pad in 48 hours, but these were not quite typical in appearance. The calves inoculated intravenously remained unaffected. Interdigital inoculation of five pigs gave negative results. Likewise horses inoculated by rubbing infected material on the tongue showed no lesions on the third day and so the tongue was re-inoculated by scarification. "One of the horses on the third day developed a vesicle on the dorsum of the tongue and, as in the successful transmission to horses in Washington, on the following day an expansion of the disease was observed affecting almost the entire surface of the tongue."

The disease differed from foot-and-mouth disease in the following respects:—(1) the transmissibility of the disease to horses from cattle and the failure to infect pigs, (2) the absence of foot lesions in infected and exposed cattle, (3) the appearance of newly-formed vesicles after the commencement of the healing process in some cases, (4) the immunity of a large proportion (up to 60 per cent.) of exposed animals in some centres, and (5) the temperature was not observed to rise over 103° F.

### A treatment of Epizootic Lymphangitis.

Bringard, *Bull. Soc. Cent. Méd. Vét.*, 1917.

In this article the author describes a method of treatment adopted by him with successful results over thirty years ago in Algeria. His observations led him to conclude that the appropriate treatment consisted in the surgical extirpation of the swollen lymphatic vessel, or its destruction by means of some procedure acting directly on the interior of its lumen. The drugs employed failed to give satisfactory results. The removal of the lymphatics by means of a bistoury is attended with grave risks on account of the damage done to the surrounding tissues, and of secondary infection.

The instruments thus used by the author consisted of iron rods about 18 inches long and about the thickness of a lead pencil, provided with a wooden handle at one end. These rods heated white hot served to cauterise the whole of the interior of the lymphatic. The operation is easily performed; the horse is cast so as to expose the affected lymphatics. If the lymphatic is no more than about 9 inches long one excises the bud on the side away from the lymphatic gland and then inserts the heated rod into the exposed orifice and passes it along the interior of the channel up towards the centre of the lymphatic gland. When the affected lymphatic is longer the process is repeated two or three times by passing the rod each time from a distal bud to another situated more centrally. The rods may be curved in order to follow tortuous lymphatics. Cases where the buds are not connected by means of apparent lymphatics are inoperable by this method, but such cases are very rare, and do not exceed 5 per cent. During the first week after the operation an abundant suppuration takes place leading to the shedding of the cord and glandular congestion.

A 10 per cent. solution of tincture of iodine is afterwards injected into the channel. It is claimed that cures can be affected in four to five weeks in cases of horses refractory to all other methods of treatment.

Details are given of eight cases occuring in the French army; on these the author had the opportunity of again testing his method of treatment. The results again proved its efficacy as all the horses were cured in a comparatively short time.—*Trop. Vet. Bullet.*, Sept., 1917.

### An Italian method of Anti-Rabic treatment.

Claudio Fermi, *Ann. d'Igiene.* 1916.

The method of rabies vaccination evolved by Fermi at Sassari, Sardinia, is briefly as follows.

The vaccine consists of a 5 per cent. emulsion of a potent fixed virus, carbolised 1 per cent., direct from the rabbit or dog. The brain instead of the cord is used, as the former was shown to be more active. The anti-rabic serum is obtained by hyperimmunising horses, using the above vaccine as antigen. The sero-vaccine consists of 1 part of serum and 2 of vaccine, carbolised 1 per cent. The method of treatment consists in the administration of sero-vaccine for the first 5 to 10 days followed by the injection of the vaccine alone up to the 25th day. The mortality from rabies following this treatment was calculated to be lower than that following treatment according to the methods employed by Högyes, Bernstein, and Remlinger. Advantages claimed for the vaccine and sero-vaccine are that they can be preserved for long periods sterile and potent in sealed tubes, can be transported over any distance for use, do not inconvenience the patient, and set up an immunity immediately in the case of severely bitten patients.

The new Italian method is stated to have been substituted in British India for a number of years for the Pasteur and Högyes methods on account of the superior results obtained.—*Trop. Vet. Bullet.* Sept. 1917.

## MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

[National V.M.A.—Northern Branch.]

The quarterly meeting was held at the Grand Hotel, Birmingham, on Thursday, November 28th, 1918, the President, Mr. John Malcolm, occupied the chair. There were also present: Messrs. W. H. Brooke, J. W. Conchie, J. L. Cormack, F. L. Gooch, T. Slipper, F. B. O. Taylor, R. C. Trigger, S. M. Woodward, H. Yeomans, J. Young, and thee Hon. Sec., Mr. H. J. Dawes.

Apologies for unavoidable absenee were received from Messrs. E. Ringer, J. J. Burchnall, L. W. Heelis, R. L. Phillips, T. J. Brain, E. O'Neill, C. F. Parsons, J. R. Carless, J. Martin, W. Trigger, H. S. Reynolds, R. Hughes, and others.

### The Dawn of Peace.

The President said they could scarcely pass on to the business of the meeting without referring to the great change that had taken place since their last assembly. No one would then have predicted that we should have peace so soon, but fortunately the unexpected had happened and they met in better spirits in consequence. They of the Midland Association had tried to keep the ball rolling during the past four years, and, taking all things into consideration, he thought they had succeeded. He hoped at their next meeting they would be able to welcome back their absent members who had left their practices at their country's call and helped to bring about such a splendid result.

### The question of Fees.

The minutes of the previous meeting were taken as read. The Hon. Sec. mentioned that the full report of the discussion on the proposed increase in the scale of professional charges was not published in the press, but a copy of it had been entered on the minutes. A copy of it had also been forwarded to the Royal College of Veterinary Surgeons and to the National Veterinary Association. He had received the following letter in reply:—

Dear Mr. Dawes,

I brought your letter and the accompanying copy of discussion at a recent meeting of the Midland Counties Veterinary Medical Association before the Partiamentary Committee at its meeting on Thursday last. The Committee passed a resolution of agreement with the opinion expressed by your Association, and this was formally adopted at a meeting of the Council held on Friday.—Yonrs faithfully,

Fred Bullock, Secretary.

*Nominations for Membership.* Mr. Cormack nominated the following members of the profession for membership of the Association:—Mr. C. S. Hunting, Loughborough, and Mr. Jones, Gloucester.

## CONTAGIOUS ABORTION IN CATTLE.

J. L. Cormack, M.R.C.V.S., Coventry.

Mr. Cormack said: In choosing a subject for discussion to-day, I have been guided mainly in deciding upon Contagious Abortion in Cattle by the following factors: the very great prevalence of the disease; the enormous loss which it causes to agriculture and to the State; the rapid strides which have been made in recent years in a knowledge of it; and the necessity for further investigation of some of its aspects, so that we might be better able to deal with it.

It is a disease with which most of us come into contact almost daily, and upon which it is possible, even probable, that different individuals hold different opinions regarding some of its aspects. I trust that each member will to day express his opinion on the subject, and give his experiences of the disease in any connection, and more particularly if they are calculated to throw further light on our knowledge, especially in reference to getting rid of the diseasee or otherwise diminishing the losses caused by it.

Contagious abortion may be described as a specific catarrh of the uterus, caused by the bacillus of Bang, and commonly followed by the expulsion of the fœtus. The expulsion may take place at any period of pregnancy, but most frequently from the fifth to the seventh month. Some recent writers suggest that this disease ought to be known by another name, such as "Bang's Disease," and one can quite understand that when he recognises 'than an animal may be infected with the disease without showing any evidence of abortion. I believe that such animals are capable of doing much harm in the way of spreading the disease.

Bang's bacillus is small, even smaller than the tubercle bacillus, non-motile, does not form spores, but is capable of living a non-parasitic life and retaining its virulence for months. It has been found to be capable of growth after as long as nine months. In a susceptible animal, it finds its most suitable place in the uterus, and especially in the pregnant uterus, which appears to be its seat of choice; but it is frequently found in the udder. It koes not appear to remain long in the blood stream; but one would like to know whether this bacillus remains for any length of time in the alimentary tract, and if so, whether it can multiply in that position.

Infection is believed to occur most frequently by ingestion, through contamination of the food and water, and most particularly from grazing. In younger animals it is possible that infection is conveyed by the milk either through the presence of bacilli in the udder —which method is not regarded as serious—or through contamination of the teats by discharge which finds its way down the hind quarters of an infected animal and so become swallowed by a calf, or into the milk from the milkers' hands.

When infection takes place by way of the mouth, it appears to reach the uterus by way of the blood stream and so becomes deposited there, but as to how all this

comes about we have no definite knowledge. Several theories have been advanced as to possible modes of entrance into the uterus, but at present we must be content to accept the fact that the bacilli do, by some means or another, find their way into the uterine cavity. Infection *per vaginam* may occur during copulation or, as has been suggested, it may be possible that bacilli passed out in the fæces may be deposited on the vulva and find their way along the vagina and into the uterus.

With regard to the importance of the bull as a factor in carrying infection, there appears to be a difference of opinion, but the weight of evidence would show that while he is not so dangerous in this respect as was formerly believed, he is, nevertheless, capable of infecting cows. The bull can and does become infected with the abortion bacillus, but it is believed that in his system the bacilli do not find a suitable medium for growth, become attenuated, and soon disappear, so that one cannot attach much importance to the risk of infected semen. It is much more possible that the part played by the bull is purely mechanical, and that he is capable of infecting a cow only by serving a clean one within a comparatively short time of having served a recent aborter.

I may say Prof. Williams, of New York State College, has been investigating this subject, particularly in regard to the mode of entry of the bacillus into the uterus, and he, of course, accepts the belief that the chief infection takes place through ingestion, and that somehow or other the bacilli find their way into the blood and ultimately into the uterus. He points out that there are three great seats of the disease, or points of infection, in the uterus—the first and most important being the internal os uteri, and the apices of the two horns. I do not see that there is much to be gained from the practical point of view from that knowledge at the present time, but such knowledge may come in useful later on.

Symptoms of the disease are lacking unless and until some cow or heifer shows signs of slipping her calf, evidence of which may be seen a day or two, or only an hour or two before the act, and in cases occurring very early in pregnancy, the only signs may be the recurrence of œstrum after the animal is considered to have settled to the bull. In those cases which occur later, a discharge, frequently blood-stained at first, but later yellowish, may be noticed, accompanied by relaxation of the ligament, and to a greater or less degree, springing of the udder. It is from now that the animal becomes most dangerous, and begins to spread disease by dissemination of the highly infective discharge. In a large number of the later cases the placenta is retained, evidently as a result of the changes which are produced in the cotyledons by the catarrh. The cotyledons have a distinct yellow colour.

As to diagnosis, while one has usually some idea whether he is dealing with a case of contagious abortion, a definite diagnosis can only be established by the application of one of the following methods:—

(1) Microscopical examination of the exudate or discharge, which can best be procured from the fresh fœtal membranes, and perhaps most readily from the cotyledons;

(2) The agglutination test. This is the most useful method and the one relied upon by most experts. It can be applied at any time, and is very delicate and reliable. This test may be applied with either of the following as the agglutinating media—exudate, milk (or better, whey), and blood serum. Blood serum is the most suitable, and is the medium almost invariably used.

(3) Complement fixation method. This is very delicate, and I believe very reliable, but is too complicated for general use.

(4) The abortion test; rarely, if ever applied now, and similar to the tuberculin test in its application.

Prevention is very difficult. It is almost impossible to keep a herd free from the disease in some districts—it is so prevalent and insidious. It will occur on farms which appear to be almost isolated, and to which there is seldom a fresh animal brought. In such cases the only explanation would appear to be that some agent acts as a carrier. It may be a man's boots, a dog, or other means of indirect contact. But much might be done in preventing the most serious source of spread by applying the agglutination test to all fresh cows before bringing them on to the premises. This could readily be done in the case of valuable herds, but it is not quite so practicable at present, where cattle are bought in the open market and while the disease is so common. It may be possible to do so one day, if we should be able to reduce the prevalence of the disease. Once the disease has appeared on a farm, the aborting animal should be immediately isolated and the most rigid sanitary measures adopted. Isolation of the cow should be maintained for several weeks, and certainly so long as there is any evidence of discharge. If remaining, remove the placenta, disinfect frequently the uterus and hind parts, including the tail and udder. Burn or bury deeply the calf and membranes. Thoroughly disinfect the premises, burn all litter, and disinfect utensils, men's boots, etc. Test all other members of the herd, and re-test them in six or more weeks, and should the case be an isolated one either have her removed to an infected farm or stall-feed her.

In badly infected farms, one would adopt vaccination in an endeavour to cut the outbreak short, and certainly to bring about a great saving both in milk and calf life.

It is pretty generally accepted that contagious abortion has a great tendency to wear itself out, and that many animals which have had an attack of the disease acquire a degree of immunity from it. Most animals acquire immunity after one attack, but many abort a second time, and some even a third time. To explain this may be difficult, but it seems feasible that many naturally infected animals will not have had a sufficiently large dose to provide complete immunity, and others may not be capable, for some unknown reason, of producing the immunising material in sufficient quantity. To hasten this immunity, the Board of Agriculture decided to experiment with animals by inoculating them with a large dose of bacilli. The experiments were successful; so also have been the extensive field experiments carried out in different counties, where the percentages of abortion have been reduced from sometimes as much as 70 per cent. to about 5 per cent., and even less.

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The Hon. Sec., before the discussion continued, read to the meeting some notes on the subject recently issued by the Board of Agriculture for the benefit of breeders and veterinarians generally.

Mr. Trigger said the profession generally realised that this was one of the most difficult subjects they had to deal with at the present time. The loss which was sustained by stock owners was very serious, as it was to the public generally. The disease was allowed to run rampant through the country without any serious attempt to deal with it, until late years. It might be difficult, as the essayist said, to ascertain how the disease made its appearance at a certain farm, but he thought it was very wicked that a man, when he found that his cows began to abort, should at once send them to auction. He had heard farmers say they could pick these animals out before they aborted, and they soon got rid of them. These animals entered the market, their exacuations were there, and farmers got it on their boots and so took the disease home to their own farms.

There should have been legislation on this subject years ago. Every man should be compelled to give notice of abortion on his farm, and cattle from that farm should not be allowed in any auction at all. The Board of Agriculture and the younger members of the veterinary profession were to be congratulated on what they had done so far, because he thought inoculation wth vaccine had been attended with very good results. He was of opinion that vaccination should be compulsory on farms where abortion existed. He recognised that there was a difficulty, especially in a herd of 60 or 80 cattle, but they could be done in groups. There was no doubt that the animal that was doing most mischief was the one that showed no signs of disease. He thought it was rather a stretch of the imagination to say that infection took place while calves were sucking. Were they to believe that the bacilli remained in the calf until it was old enough to go to the bull?

Mr. GOOCH said he attended a meeting at Norwich two years ago, when Sir Stewart Stockman addressed the Norfolk Agricultural Association on this very subject. One of Sir Stewart's great points was that farmers should retain all aborted animals if they wished to get rid of the scourge. Farmers seemed to think it necessary to immediately get rid of an aborting animal from their herds, but Sir Stewart Stockman suggested that it would be better to keep them and breed from them again after using vaccine. He (Mr. Gooch) had had good results from retention and natural immunising.

Mr. TAYLOR said the subject was of great interest to the country practitioner. His own little experiments with the vaccine treatment had had good results. At one farm he vaccinated 24 heifers, according to the Board's regulations, and every one carried her calf. At another farm, three or four had slipped their calves, but they were vaccinated, and they now carried their calves right through. It would be interesting to know long this vaccine carried immunity. After vaccination, he had had some cattle fall off in condition, but he could not say whether it was a common occurrence.

Mr. YEOMANS said his experience of the subject was limited, but he thought that in future milk production was going to be such a very important branch of agriculture that there would be plenty of work for veterinary surgeons in the use of this vaccine test. If the results are satisfactory, which they promise to be, it would give them an opportunity of demonstrating to agriculturists the value of the veterinary profession, which would be a good asset to the general practitioner.

He would like to hear whether any member had had any experience of an outbreak of abortion in mares. Although dairy cows were very valuable, Shire mares were more so.

The HON. SEC. said he must first of all thahk Mr. Cormack for his readiness in acceding to the request made to him for a paper. It was an example which he would like to see followed by other members. It seemed to him that this question of contagious abortion in cattle was much more difficult than it appeared to be. If a cow that has aborted has a calf put with it and is sent into the market it is a difficult thing to tell that it is an aborted animal. There may be nothing to guide you in the matter. Until something more definite was obtainable in a diagnostic sense, it was a disease that would take a lot of reckoning with. Again, a farmer was told that if his cow aborts he must take it into another building, but how many farms are there where that could be done? The farmer did not like turning a sick animal out of a warm shed. Another difficulty was that knowledge of the outbreak did not come to the veterinary surgeon first hand. The trouble had probably been going on for some time before the farmer mentioned it, and it had probably assumed extensive proportions before the veterinary surgeon knew anything about it. Reverting to the question of the difficulty in telling aborted animals, he expressed the opinion that the State should take this matter up and submit all dairy animals to the test to find out whether they were affected. It would no doubt be a big undertaking, but it would help to get rid of the disease.

The PRESIDENT added his thanks to those of previous speakers for the very interesting discussion which Mr. Cormack had opened. Abortion in mares was a very serious matter, considering the value of a foal, but he did not think it was so widely spread and in such general epizootic form as in cattle. He understood that the casual organism was different in mares from what in cattle, and still different in the case of sheep. One point in the discussion seemed a little strange to him, and that was the effect upon calves. It was suggested that calves were infected with the abortion bacillus either through drinking milk from infected udders—not an uncommon seat of infection—or through sucking teats that have beome infected by a discharge coming down the mother's hind quarters. He had some hesitation in accepting that, considering the length of time that must elapse before the calf became infected in that way and its having a calf of its own. If they could vaccinate cows that were non-pregnant with the abortion bacillus and two or three months afterwards safely put them to the bull, he could scarcely conceive that a cow infected years before would be likely to abort. The methods of infection were not altogether clear. As there was no direct opening in the womb through which the infective discharge might enter, they must look to the blood stream as the source of contagion. Mr. Cormack told them that the abortion bacillus was non-motile, so that it was difficult to understand how it entered the womb except through the blood stream.

With regard to prevention, where a farmer has no abortion, and he decides to keep his breeding at home, he will continue for a long period without a case on his premises. There was direct experience on that point in testing for tuberculosis; and by inducing a farmer to do his breeding at home, they had helped to stave off three of the most virulent diseases of the present day—Tuberculosis, Abortion, Johne's disease. He would like to impress upon every member the importance of persuading farmers to take every step that was possible in the eradication of those three diseases. If it was taken up properly, it was not an expensive matter to the farmer, and incidentally it was remunerative to the veterinary surgeon. With regard to the eagerness of the farmer to sell an animal that was likely to abort, he did not think the farmer really meant to do his neighbour an injury, but he only looked at the question from his own point of view. The only thing for the veterinary surgeon to do, and for the State to do, was to educate the farmer, who, if he knew he was going to financially injure his neighbour by selling him an aborting animal might be a little more careful. As to putting another calf to an animal that had aborted as a better means of selling it, that of course, was a very reprehensible practice. From what he could gather, both Sir John M'Fadyean and Sir Stewart Stockman were against compulsory legislation in the matter, but personally, he thought that any farmer who took a recently aborted cow out of his herd and sent her to the public market was guilty of an offence which ought to be punishable.

As to the retention of aborted animals, raised by Mr. Gooch, he thought everyone with practical experience would agree that it was the right thing to do. In ever so many herds, contagious abortion had gradually died out in the ordinary way. Unless any new cows were brought on to the farm, it generally died out in two or three years, so that when a cow had aborted it seemed

to be the right thing to keep it in the herd. Whether it was still capable of spreading abortion was another matter.

It would be interesting to know whether it was possible for infected milk to transmit the disease to the human being. He believed that some recent experiments had shown that it was not possible.

Mr. BROOKE said he would like to ask a question. As the alimentary tract seemed to be recognised as a frequent means of infection, he would like to know on what grounds that opinion was formed.

REPLY.

Mr. CORMACK said there seemed to be very few diseases in the country that were more important from a national point of view than contagious abortion in cattle. The loss spread over the British Isles in a year must amount to an enormous sum of money. Some years ago the loss estimated to occur from animals that aborted was £7 10-0 per head, so he did not know what the loss could be reckoned at to-day, with the price of cattle and milk so much higher than it was. As to sending an aborting cow to market with a normal calf, he should say it was a very shady practice which ought to be covered by some form of legislation.

Mr. TRIGGER: I should think it is a fraud, if you could prove it.

Mr. CORMACK said he thought Sir John M'Faydean and Sir Stewart Stockman were disinclined to suggest any form of legislation in regard to notification of the disease. Sir Stewart Stockman in one of his papers, said it would be too expensive for any particular district to take up. It would have to be administered all over the country from headquarters, and there would be very great difficulty in carrying out, which would probably amount to the paralysing of the cattle industry. With regard to the possibility of infection in the calf while sucking, he did not suggest that a heifer calf was going to carry the bacillus in her system until she was old enough to calve herself. But one could not get away from the possibility of the calf swallowing large numbers of bacilli from the milk and spreading them. He had not seen anywhere any remarks regarding the possibility of the spread of the disease by means of the fæces. Was it to be supposed, when infection took place by means of the mouth, that every single bacillus that got into the alimentary tract found its way into the blood stream, or must they conclude that large numbers of the bacilli were passed out in the fæces? The mouth was believed to be the main source of contagion, both experimentally and clinically, and practically all the evidence went to show that infection, certainly in the case of the uterus, was conveyed by the blood stream. If so, one must eliminate to a very great extent the question of infection by the vagina. When the disease was generally found in prescribed areas and in remote parts of the uterus, one must conclude that it arrived there by the blood supply. He did not see how they could get infection of the uterus through the vagina, unless it was through the agency of the bull. A great many heifers aborted at grass, so that the grass became highly infected and the disease was spread in that way. It is possible that an animal which has been vaccinated could spread infection by means of the bowels, and if she happened to abort she would certainly spread it by means of the discharge.

Mr. BROOKE: Vaccination would have no effect on the bowels?

Mr. CORMACK: I should think it might, because you can't get any part of the body that is not supplied with blood.

Mr. BROOKE: Except that the alimentary canal is outside the blood.

Mr. CORMACK, continuing, said that the retention of aborting animals was the only wise thing to do in cases where the disease was present to any great extent. If there was only an isolated case, he advised testing the other animals, and re-testing in a few weeks time. If there were no reactors, he thought it would be foolish to retain that animal on the farm.

Mr. GOOCH: If natural immunisation takes place, why get rid of it?

Mr. CORMACK: Natural immunity does not always occur; you get disease a second, and even a third time. The results of vaccination have been exceptionally good, but he would not say that all the results were due to vaccination. He had not noticed any cases of loss of condition, referred to by one of the speakers, and he had not received any complaints about loss of milk through vaccination. He had no knowledge of the length of time infection might last in the alimentary canal.

He had seen some mares that slipped their foal, but he did not know that it was due to contagious abortion. It could be produced in a mare experimentally by means of Bang's bacillus, but the mare was not liable to contract this disease naturally. Abortion in sheep was also a distinct disease. There have been cases of cattle in which the causal agent was the vibrio which causes abortion in sheep, but such cases were rare. Abortion is not so prevalent in mares, and a point to note in this connection is that mares generally foal at one particular time of the year, whereas cattle calve at all times of the year, and as the pregnant uterus was the chief *habitat* of the bacillus it was kept vigorous all the year round. He thought the chief risk of infection through the vagina was that the bull might carry the infection from another cow, or he might inoculate the uterus with germs which he might take in from the lips of the vulva of the particular cow he was serving. He agreed that there was great need for the further education of the farmer in these matters as a means of checking the spread of the disease.

On the motion of the President, seconded by Mr. Gooch, a vote of thanks was accorded Mr. Cormack for his address, both gentlemen agreeing that the whole discussion had been very informative.

The company adjourned for tea before separating.

H. J. DAWES, F.R.C.V.S., Hon. Sec.

## COCCIDIOSIS IN THE RABBIT.

*To the Editor of "The Veterinary Record."*

Sir,—The last issue of *The Veterinary Record*, (4th January), contains a report of a meeting of the Central Veterinary Society, at which a paper on Coccidiosis in the Rabbit was read by Mr. J. B. Buxton, F.R.C.V.S., D.V.H. In the debate which followed apparently nearly every statement made in this paper was accepted as correct, or at least allowed to pass without challenge, and one member went so far as to say that "Mr. Buxton's paper would be of great value abroad as well as in England." I venture to say that that opinion is not likely to be shared by anyone who is well acquainted with the disease in question.

It appears to me to be much more likely that, if the erroneous statements made in the paper are allowed to pass uncontradicted, readers abroad may infer that the study of coccidiosis of the rabbit has been sadly neglected in this country, and it is the fear of that result which impels me to take upon myself a very uncongenial task.

Premising that "some knowledge of the manner of reproduction of the parasites is essential to the clinician in order that the spread of the disease may be satisfactorily limited," Mr. Buxton goes on to give a description of the life cycle of the parasite which is replete with errors:—

(1). Mr. Buxton says: "The oocysts are expelled from the body with the fæces, and under favourable con-

ditions of warmth and moisture the cell contents divide into two and then into four spherical bodies, called Sporoblasts."

This is an inaccurate account of sporoblast formation, and no one who has followed the process could have fallen into the error. I challenge Mr. Buxton to produce a preparation showing an oocyst containing two sporoblasts.

(2). Continuing the account of the oocysts, Mr. Buxton says: "If a rabbit ingests such a cyst, the wall becomes dissolved and the sporocysts are liberated. These in turn rupture and set free the sporozooites or falciform corpuscles."

Each of the sentences here quoted contains a misstatement. Since the publication of Metzner's observations it has been known that the wall of the oocyst does not become dissolved, that the sporocysts do not burst, and that the liberation of the sporozooites takes place without either of these things happening.

(3). Professing to describe the formation of microgametes, Mr. Buxton says: "The nuclei become elongated and comma-shaped, and two flagella appear towards the anterior extremity." He also gives a figure of a microgamete in support of this statement, but it bears only a most distant resemblance to the microgamete of the rabbit coccidium, and only serves to show that he had never seen the object he was describing.

What has just been said also applies to the figure which is labelled "Macrogamete" and shows an indentation marked "micropyle." Mr. Buxton evidently does not know that macrogametes do not possess a micropyle, the thing so named being seen only in the oocyst. But in point of fact the figure does not bear the most distant resemblance to either a macrogamete or an oocyst; and, if it is accurate, one can confidently assert that the object from which Mr. Buxton made the drawing was not a coccidium at any of its stages

(4). With regard to the fertilisation of the macrogametes, Mr. Buxton states that "A single male element penetrates the female cell at the micropyle, which then closes."

This I believe to be a most unwarranted statement unless Mr. Buxton is prepared to vouch for the facts from his own observations, or to give the name of an authority who does.

(5). Mr. Buxton's description of the lesions is equally inaccurate. Abscesses are never formed in the liver in cases of coccidiosis in the rabbit, or, if they are, coccidia have nothing to do with their formation.

The bile ducts do not become more branched, and the connective tissue does not become hypertrophied, nor does it produce either venous congestion or atrophy.

Two courses are now open to Mr. Buxton. (1). He may vouch for the accuracy of the statements which I have criticised, but in that case he ought in justice to previous authors to have given his reasons for dissenting from them. (2). He may say that he was not professing to describe what he had himself observed, but merely quoting for the instruction of the Central Veterinary Society from the writings of others. Unfortunately he has made that line of defence very difficult, for the part of his paper which deals with the disease in the rabbit does not contain a single reference to any authority on the subject. The whole tenor of his paper conveyed the impression that he was giving the Society the benefit of his own observations, and, without demur, he accepted the compliments which appear to have been paid to him on that understanding.

It is also not open to Mr. Buxton to excuse himself on the ground that the errors which he committed were trivial or practically unimportant, for he told the "Clinicians" who he was addressing that a knowledge of the facts was essential "in order that the spread of the disease may be satisfactorily limited." He is therefore bound either to maintain the accuracy of his statements, or to apologise to the members of the Central Veterinary Society for having misled them.—Your obedient servant,

J. M'FADYEAN.

Ryl. Vety. Coll. 7th January.

## THE R.C.V.M.A. AND THE COUNCIL R.C.V.S.

Dear Sir,—Isn't "Reform" a little illogical when he asked, in your last issue, for us to eliminate from our minds "those who study personalities prior to professional interests" after he himself indulged freely in them?

The bulk of the members of Council are representative practitioners and should know the requirements of the majority of the profession. If they being tame sheep, were to be replaced by others of improved capacity should we fare better? Why blame the few schoolmen for a greater number of the Council, who has the wisdom of the speechless parrot? It seems to me the few have more forcible characters than the majority.

I quite agree with Prof. Gaiger's remarks. The tame sheep representing the bulk of the profession are on the Council at the will of the majority of the profession. Please, fellow practitioners, don't talk, think, and grumble. Let us act. The ultra scientists have done more for the profession than the majority of practitioners, who have the wisdom of the ants. Judging by the latters' contribution to the sum total of veterinary knowledge and progress, it is with them "take all, and give nothing."

"ACTION NOT TALK."

Dear Sir,—I have read with considerable interest the "After War problems," reported in *The Veterinary Record* of 28th December last, and feel that our grateful thanks are due to the President of the Royal Counties V.M.A. for giving expression to the thought which has occupied many of our minds for some time past—that things were not altogether well with us.

There is no doubt that the profession is suffering from an anæmia of a very pernicious nature—an anæmia due in a great measure to the apathy of a goodly number of its members.

If steps are not immediately taken to infuse new blood into the ranks of our governing body the profession's parlous condition will become one of utter hopelessness.

The forthcoming election gives each one of us an opportunity to put our house in order. The veterinarians who have served their country well, and upheld the dignity of the veterinary profession in every sphere of military operations, will not, I opine, be prepared to return home to the old regime; and I appeal to them to support with their votes only those who will maintain the status we have gained during the war, and who will take reasonable interest in our destiny.

Many of the present Council have been vouchsafed long terms of service at the Council Board, and in the interests of the Royal College of Veterinary Surgeons, their retirement would now prove advantageous.

It is certainly time that we should free our governing body from the domination of those who, in the midst of weakness, have assumed autocratic rule, or whose only power is that conferred by virtue of official position.

Let us place on our Council men with broad views, sound judgement, and without the proverbial axe to grind—men who will use every endeavour to raise our profession to that position among the arts and sciences which its nobility and importance dictates.

I agree with Mr. Gaiger, that "long range sniping" does not make for good—one so often misses the mark, or hits the wrong one. To clear the trench which holds up our advance is strategically sound, and with this object in view, I subscribe myself,

BOMBER.

## TRIORCHIDY—CASTRATION.

"Scrutator," in your last issue, wrote:—"that the practitioner, against whom the case went, was speaking the truth—that he did remove two testicles."

I never said or did anything of the kind. What I did was to remove a testicle and a tumour in the spring of 1916, and remove a tumour in the spring of 1917, *i.e.*, only one testicle and two tumours. When the tumour dropped off some farm hands said it was a testicle, which I consider to be "bunkum."

It is not my opinion that it was a case of triorchidy.

"Scrutator" further writes: "It is a pity I did not proceed for a new trial, etc., so as to safeguard the profession against a further charge of unskilfulness—which it amounted to." "Scrutator" might have put it in another way—the profession ought to have proceeded to a higher court, to clear my reputation and safeguard the profession, etc. Many years ago, however, I put down the profession collectively as a dead letter.

"Scrutator" is also wrong as to "unskilfulness." The Judge found negligence in that I removed a healthy testicle, cut the scrotum open for removal of second testicle, that I found a healthy testicle and simply left it there, . . . .

If "Scrutator" had as much work in hand at the time of the trial as I had he would think twice before proceeding for a new trial. Personally, it would not be worth while as far as I was concerned. What I did was to put the country-side ablaze with copies of my letter as it appeared in *Record*: so much so, that at a subsequent Redhill Market I had quite an ovation—metaphorically speaking, carried shoulder high—and the defendant, and V.S. who supported him, were called unmentionable names.

In conclusion, had I realised so much before the trial as I did afterwards the case would not have come up at all. I would simply have written the defendant to stick my fee in a rather peculiar part of his anatomy, and added a rider to the effect that he was not to send for me again.—Yours, etc.

The Gables, Reigate. CHAS. A. SQUAIR.

## SUBSCRIPTIONS TO R.C.V.S.

The Secretary of the Royal College of Veterinary Surgeons begs to acknowledge the receipt of the following subscriptions for 1919:—

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## ARMY VETERINARY SERVICE

### THE MILITARY CROSS.

The King has been pleased to approve of the following awards for distinguished service in connexion with military operations in France and Flanders. Dated Jan. 1, 1919:—

* * * *

Capt. R. J. Vickers, Can. A.V.C., 2nd Can. M.V.S.

ORDER OF THE BRITISH EMPIRE.

The King has been pleased to give orders for the following appointments to the Most Excellent Order of the British Empire, for valuable services rendered in connexion with military operations in various Fields (Dated Jan. 1, 1919):—

O.B.E. (Military Division).

*Italy*—Temp. Maj. T. Bone, M.C.; Temp. Capt. D. Starkey; Capt. (actg. Maj.) W. Stothert (T.F.).

C.B.E. (Military Division).

*Egypt*—Maj. (Temp. Col.) A. G. Todd, D.S.O.

O.B.E. (Military Division).

Capt. (actg. Maj.) V. A. Bartrum (T.F.); Capt. (actg. Lt.-Col.) W. J. Dale; Bt. Maj. G. E. Tillyard; Maj. (temp. Lt.-Col.) J. Kendall, Aust. A.V.C.

*Salonika*—Maj. W. L. Harrison, F.R.C.V.S. (T.F.); Temp. Capt. G. Moir.

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MOST HONOURABLE ORDER OF THE BATH.

The King has been pleased to give directions for the following promotions in, and appointments to, the Most Honourable Order of the Bath, for valuable services rendered in connexion with military operations in Salonika (dated January 1, 1919):—

C.B. (Military Division).

Col. (temp. Brig.-Gen.) Fitzpatrick Eassie, C.M.G., D.S.O.

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PROMOTIONS AND OTHER REWARDS.

War Office, Jan. 1.

The King has been pelased to approve of the following rewards for distinguished service in connexion with Milirary Operations in Egypt (dated Jan. 1, 1919):—

THE MILITARY CROSS.

*Egypt*—Capt. G. C. Page, Aust. A.V.C., attd. 1st Sig. Sqdn., Aust. Engrs.

TO BE BREVET LIEUT.-COLONEL.

*Salonika*—Maj. (temp. Lt.-Col.) W. A. Jelbart.

TO BE BREVET MAJOR.

Capt. (actg. Maj.) C. A. Murray.

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HOME SERVICES.

The King has been pleased to give orders for the following promotions in, and appointments to, the Most Honourable Order of the Bath, for services in connexion with the War (dated Jan. 1, 1919):—

C.B. (Military Division).

Maj. and Bt. Lt.-Col. (actg. Lt.-Col.) Arthur Olver, C.M.G., F.R.C.V.S.

ORDER OF ST. MICHAEL AND ST. GEORGE.

C.M.G.

Maj. and Bt. Lt.-Col. (actg. Col.) Wm. Samuel Anthony; Maj. and Bt. Lt.-Col. John James Aitkin, D.S.O.; Capt. and Bt. Maj. (actg. Lt.-Col.) Alfred Searle Head, F.R.C.V.S., R. of O.

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ORDER OF THE BRITISH EMPIRE.

The King has been pleased to give orders for the following promotions in, and appointments to, the Most Excellent Order of the British Empire, for valuable services rendered in connexion with the War:—

M.B.E. (Military Division).

Temp. Qrmr. and Capt. C. Budd; Hon. temp. Lieut. G. Hetherington; Temp. Qrmr. and Capt. R. Owen.

OFFICERS (Civil Division).

Lieut.-Col. Francis Dillon Hunt, Ahmednagar, Bombay.

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PROMOTIONS AND OTHER REWARDS.

The King has been pleased to approve of the following rewards for valuable services rendered in connexion with the War (dated Jan. 1, 1919:—

TO BE BREVET LIEUT.-COLONEL—Maj. G. C. O. Fowler, Ret. pay (R.A.V.C.)

TO BE BREVET MAJOR—Capt. A. F. Castle, F.R.C.V.S. (T.F.); Capt. (temp. Maj.) J. Tagg (T.F.).

TO BE MAJOR—Qrmr. and Capt. T. E. Campey, M.B.E.

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The King has be pleased to give orders for the following appointments for valuable services rendered in connexion with Military Operations in North Russia (dated Jan 1, 1919):—

O.B.E. (Military Division).

*North Russia*—Temp. Capt. (actg. Maj.) F. Chambers.

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War Office, Jan. 6.

In a dispatch received by the Secretary of State for War from Gen F. R., Earl of Cavan, K.P., K.C.B., M.V.O., Commander-in-Chief of the British Force in Italy, the following names of those officers whom he considered deserving of special mention were submitted:—

Capt. (actg. Maj.) T. J. Faithfull; Maj. (temp. Lt.-Col.) H. S. Mosley, D.S.O.; Capt. (actg. Maj.) W. Stothert (T.F.); Capt. (temp. Maj.) T. Bone, M.C.; Temp. Capt. D. Starkey.

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Extracts from *London Gazette*,

WAR OFFICE, WHITEHALL, Jan. 3.

REGULAR FORCES. ROYAL ARMY VETERINARY CORPS.

Maj. W. Jowett, S. Afr. Vety. Corps, to be temp. Maj. (Apl. 9, 1918, seny. Dec. 1, 1914) (substituted for notification in *Gazette* of Apl. 27 and May 30, 1918).

Jan. 4.

Maj. C. M. B. Harris, D.S.O., F.R.C.V.S., to be Lieut.-Col. (Dec. 15, 1915, but not to carry pay or allowances of that rank prior to July 1, 1917, unless holding temp. or actg. higher rank with pay and allowances).

Jan. 6.

The following temp. Capts. relinquish their commns. (Jan. 7), and retain rank of Capt.:—On account of ill-health—J. W. Bennett, T. A. Huband, W. Bugg; on account of ill-health contracted on active service—R. W. Glaister.

Jan 7.

To be temp. Lts.:—H. L. Dixon (Oct. 18, 1918); J. S. Shepherdson (Oct. 24, 1918).

The following temp. Lts. relinquish their commns.:—H. L. Dixon (Dec. 5. 1918.); J. S. Shepherdson (Dec. 7, 1918).

Jan. 8

Temp. Lt. to be temp. Capt.:—G. C. Lawrence (Dec. 14, 1918).

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## OBITUARY.

WM. CLATER WILKINSON, M.R.C.V.S., Hill Side House, Hemswell. Graduated, Lond: July, 1906.

## Successful Ballot at Belfast.

A sum of about £1,000 has been raised for the Royal Army Veterinary Corps Comforts Fund as a result of a ballot organised by Mr. J. Ewing Johnston, Veterinary Officer in charge of the Remount Department at Balmoral, Belfast; and Mr. F. W. Brittain. These gentlemen not only promoted the ballot, but carried out the whole of the arrangements, and the success achieved is a striking tribute to the energy and thoroughness with which they performed their praiseworthy work. There were 25 prizes, the first being a thoroughbred mare, the second a fat bullock, the third a sheep, the fourth a pig, and the fifth two tons of house coal. The draw took place in the Imperial Picture House on the afternoon of December 20th. The counterfoils of the tickets which had been sold were placed in a large churn, and the winning numbers were drawn by the Honourable Mrs. Herbert Dixon. Amongst those present were the Lord Mayor and Lady Mayoress (Sir James and Lady Johnston). A telegram was received from Colonel R. H. Holmes, C.M.G., D.D.V.S., Dublin, expressing regret for his unavoidable absence.

The Lord Mayor, speaking previous to the draw, said Mr. Johnston and Mr. Brittain had been indefatigable in bringing the claims of the Royal Army Veterinary Corps under the notice of the public, and they were entitled to the utmost praise for the efforts they had made to help the Comforts Fund. The officers and men of the Corps would realise that they had not been forgotten by the people of Belfast, and they would certainly appreciate the very handsome contribution which the promoters of the ballot were able to make to the fund for providing them with comforts during the festive season. (Applause.)

Mr. J. Ewing Johnston said the Royal Army Veterinary Corps Comforts Fund had supplied large quantities of warm clothing, stationery, books, magazines, pipes, tobacco, cigarettes, and brushes to units serving in France, Eygpt, Salonica Mesopotamia, Gallipoli, Italy, Russia, and Servia. It had also provided two V.A.D. hospitals, working in connection with the veterinary and remount camps in France. Many of the senior officers had written to the honorary secretary testifying to the men's appreciation of the gifts. The subscriptions from Belfast had only amounted to about £400, but the contribution of £1,000 from the ballot was tbe largest donation the fund had received from any source. The thanks of the promoters were due to the donors of the prizes, and especially to the members of the Dixon famity, who were always in the forefront in any effort on behalf of war charities. Sir Thomas Dixon gave a handsome donation, the first prize was presented by Major Daniel Dixon, and through Captain Herbert Dixon they had been able to defray all the incidental expenses. (Applause.) Thanks was also due to those who had sold tickets, and to the directors of the Imperial Picture House for allowing them to hold their draw in their premises (Applause.)

The draw was then made by Mrs. Dixon. It was decided that the first prize should go to the holder of the thirteenth ticket drawn, and the winner was Miss Thompson, Glastonbury Avenue, Belfast. The second prize went to Mr. E. Hetherington, Upper Newtownards Road, Belfast: and the third to Miss Macbeth, Carlisle Road, Londonderry.

On behalf of the promoters and a few friends, Miss Emilie Johnston, daughter of Mr. J. E. Johnston, presented Mrs. Dixon with a beautiful hunting refreshment case.

The Honourable Mrs. Dixon, in reply, said she regarded it as a great privilege to have been entrusted with the responsibility of drawing the winning tickets. The men to whom comforts were to be sent by means of this fund had devoted their efforts to the alleviation of the suffering of army horses. Those animals had experienced the horrors of the war just as much as the men engaged in it, and she hoped the people who had failed to win prizes would remember that fact. (Applause.)

The Lord Mayor said Mrs Dixon had endeared herself to all of them by the work she had done during the war, and the same remark applied to every member of the Dixon family. They were ever ready to give their help in furthering any scheme for the benefit of our fighting men, and their generosity was unbounded. (Applause.)

On the motion of Mr. J. M. Hamill, seconded by Mr. J. A Jordan, a vote of thanks was accorded the Lord Mayor for presiding, and the proceedings then terminated.—*The Belfast News-Letter.*

[Owing to pressure of other matter on our present limited space, the foregoing has unavoidably been held over.]

## DISEASES OF ANIMALS ACTS 1894 TO 1914, SUMMARY OF RETURNS.

| Period. | | Rabies. Cases Confrmd Dogs | Rabies. Cases Confrmd Other Anmls | Anthrax Out-breaks (a) | Anthrax Animals. | Foot-and-Mouth Disease. Out-breaks (a) | Foot-and-Mouth Disease. Animals. | Glanders.† Out-breaks (b) | Glanders.† Animals. | Parasitic Mange. ‡ Out-breaks (b) | Parasitic Mange. ‡ Animals. | Sheep Scab. (b) | Swine Fever. Out-breaks (a) | Swine Fever. Slaughtered. * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GT. BRITAIN. Week ended Jan. 4 | | 8 | 2 | 5 | 5 | | | | | 189 | 444 | 22 | 26 | 15 |
| Corresponding week in | 1918 | | | 8 | 10 | | | 1 | 2 | 161 | 361 | 22 | 22 | 6 |
| | 1917 | | | 20 | 20 | | | | | 81 | 194 | 23 | 43 | 16 |
| | 1916 | | | 15 | 15 | | | 1 | 5 | 65 | 152 | 33 | 90 | 220 |

‡ The Parasitic Mange Order of 1911 was suspended from 6th August, 1914, to 19th March, 1915, inclusive

(a) Confirmed. (b) Reported by Local Authorities

† Counties affected, animals attacked :— Excluding outbreaks in army horses.

Board of Agriculture and Fisheries, Jan. 7, 1919

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IRELAND. Week ended Jan. 4 | | ... | ... | ... | ... | ... | ... | ... | ... | Outbreaks 1 | 13 | 3 | 13 | |
| Corresponding Week in | 1918 ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 17 | ... | ... | |
| | 1917 ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 20 | 3 | 13 | |
| | 1916 ... | 1 | 5 | ... | ... | ... | ... | ... | ... | 3 | 13 | 1 | ... | |

Department of Agriculture and Technical nstruction for Ireland (Veterinary Branch), Dublin, Jan. 6, 1919

NOTE.—The figures for the Current Year are approximate only.

* As diseased or Exposed to Infection